

**ABSTRACT OF THE DISCLOSURE**

[0072] Systems and methods are described for spatial-heterodyne interferometry for transmission (SHIFT) measurements. A method includes digitally recording a spatially-heterodyned hologram including spatial heterodyne fringes for Fourier analysis using a reference beam, and an object beam that is transmitted through an object that is at least partially translucent; Fourier analyzing the digitally recorded spatially-heterodyned hologram, by shifting an original origin of the digitally recorded spatially-heterodyned hologram to sit on top of a spatial-heterodyne carrier frequency defined by an angle between the reference beam and the object beam, to define an analyzed image; digitally filtering the analyzed image to cut off signals around the original origin to define a result; and performing an inverse Fourier transform on the result.